



Thomas Edison  
Kerosene Lamp with  
First Screw-in Base  
1881



Edison spiral point lamp with  
"Helix" base  
1882  
Carbon Filament



Gas Light Fixture Modified for  
Edison Electric Lamp  
1879



















# MEGA ZAPPED

AT THE SPARK MUSEUM

Loud, scary fun for the whole family.





**ZAPPED**  
**AT THE SPARK MUSEUM**  
Loud, scary fun for the whole family.







# DC DYNAMO POWERED BY STEAM ENGINE

In 1816, Thomas Edison and his associates at Edison Electric Company designed a steam engine for use in a power station. It was a simple, compact design that could be used in a variety of applications.

The Edison steam engine was a simple, compact design that could be used in a variety of applications. It was a simple, compact design that could be used in a variety of applications.

In the early 1800s, the Edison steam engine was used in a variety of applications. It was a simple, compact design that could be used in a variety of applications.

The Edison steam engine was a simple, compact design that could be used in a variety of applications. It was a simple, compact design that could be used in a variety of applications.



This photograph shows the Edison steam engine, which was used in a variety of applications. It was a simple, compact design that could be used in a variety of applications.

Edison Electric Company



START



**EDISON POWER PLANT AT PEARL STREET, 1882**

The photograph shows a group of men standing in front of the Edison power plant at Pearl Street, New York, in 1882. The plant was the first of its kind in the United States, and it was the first to use direct current (DC) for power distribution.



**LAYING UNDERGROUND EDISON ELECTRICAL "TUNNELS", 1882**

The photograph shows two men working on a large, curved pipe or cable, identified as laying underground Edison electrical "tunnels" in 1882. The men are using tools to work on the pipe, which is being laid in a trench.



**EDISON NIELAH PARK POWER PLANT, 1892**

The photograph shows a large, industrial machine with multiple vertical columns and a complex system of pulleys and cables, identified as the Edison Niagara Park power plant in 1892. The machine is a large, vertical engine with various components.



By 1850, the first American-made steam engine was built in the United States. It was a small, portable engine that could be used in a variety of settings, from agriculture to industry. The engine was built by Oliver Evans and was the first of its kind. It was a significant milestone in the history of American engineering.



1850





voltages at the transformer output. A transformer  
with direct current. Because DC isn't changing  
changing magnetic fields.





# THE FIRST ELECTRICAL GENERATOR: 1832

THE FIRST DEVICE TO PRODUCE CONTINUOUS ELECTRICAL CURRENT



The first electrical generator was invented by Michael Faraday in 1831. It was a simple device consisting of a coil of wire placed between the North and South poles of a magnet. As the coil rotated, it cut the magnetic lines of force, inducing an electric current. This principle is the basis of all modern electrical generators.



First Dynamo  
Designed by Hypolyte Pix., ca 1832













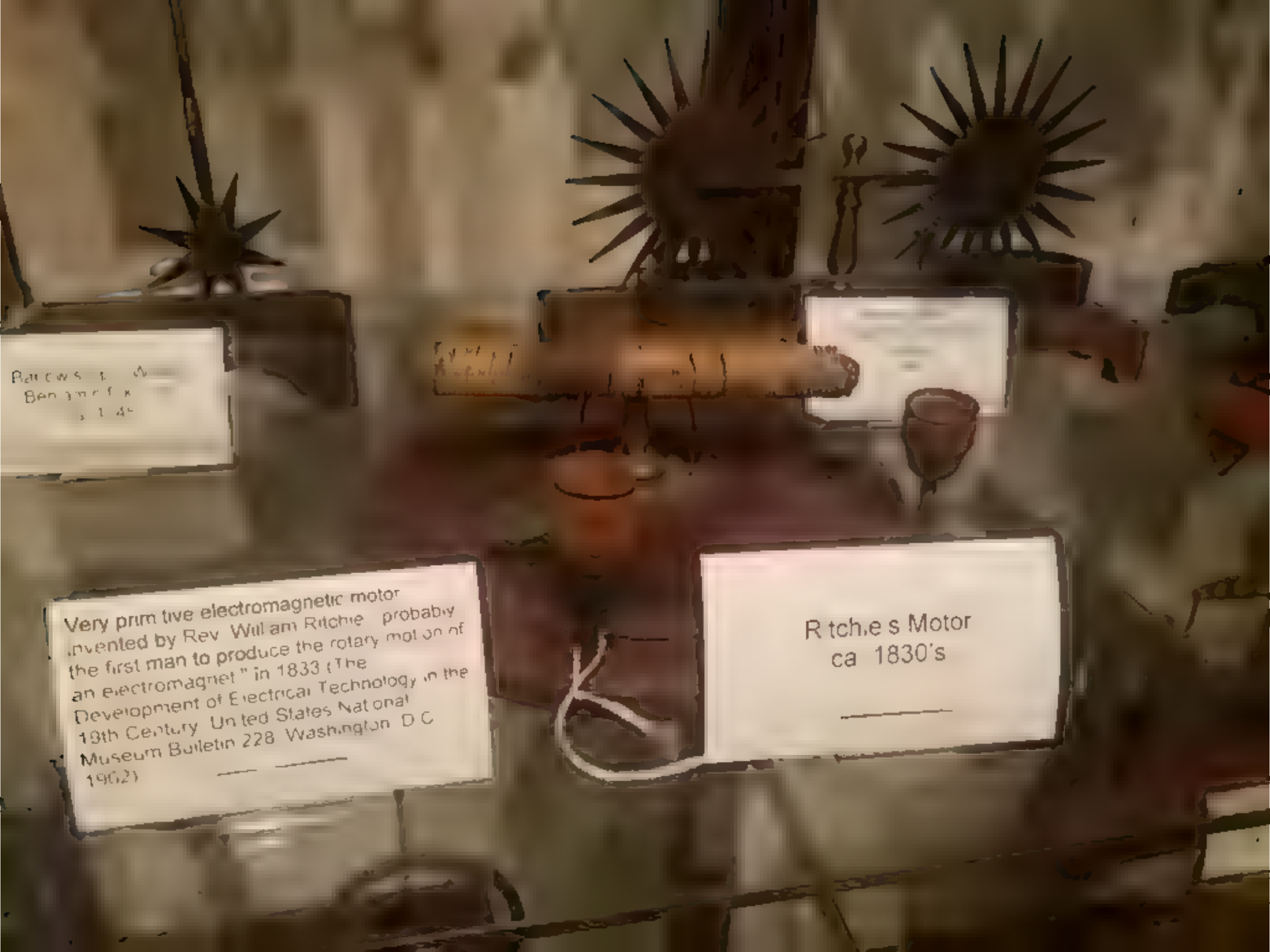








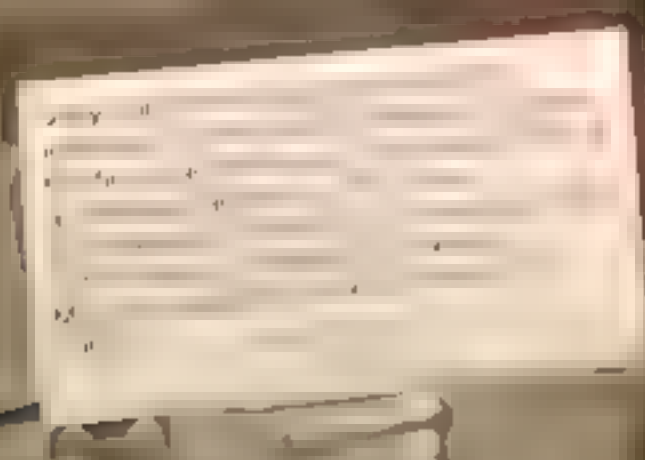




Barlow's Motor  
Benjamin Franklin  
1745

Very primitive electromagnetic motor  
invented by Rev. William Ritchie - probably  
the first man to produce the rotary motion of  
an electromagnet "in 1833 (The  
Development of Electrical Technology in the  
19th Century United States National  
Museum Bulletin 228 Washington D.C.  
1962)

Ritchie's Motor  
ca 1830's











APPARATUS FOR RECEIVING  
SPACE SIGNALS

























# CHART OF ELECTROMAGNETIC RADIATION

CHANGING THE SPEED OF LIGHT

**FREQUENCY RANGE**

WAVE LENGTH BANDS

## REFLECTION

1144 EX-111

**DIEFHAETI**

PULLEY + JURY

## COMPUTERIZED

PROGRESS ULTRA-VIOLET

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

1990年12月15日

DAME ASSOCIATES

**ZADATKI**

1900

## THE WIR

1915



1915

GUGLIELMO MARCONI 1874-1937











GVILLIELMI GIL.  
BERTI COLCESTRE-  
NIS MEDICINONDI-  
NENSIS

DE MAGNETE, MAGNETI-  
CISQVE CORPORIBVS, ET DE MAG-  
no magnetis telluris Physiologia noua,  
plurimis & argumentis, & expe-  
rimentis demonstrata.



LONDINI

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EXCVDEBAT PETRVS SHORT ANNO  
MDC.

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## ELECTRICAL EXPERIMENTS.

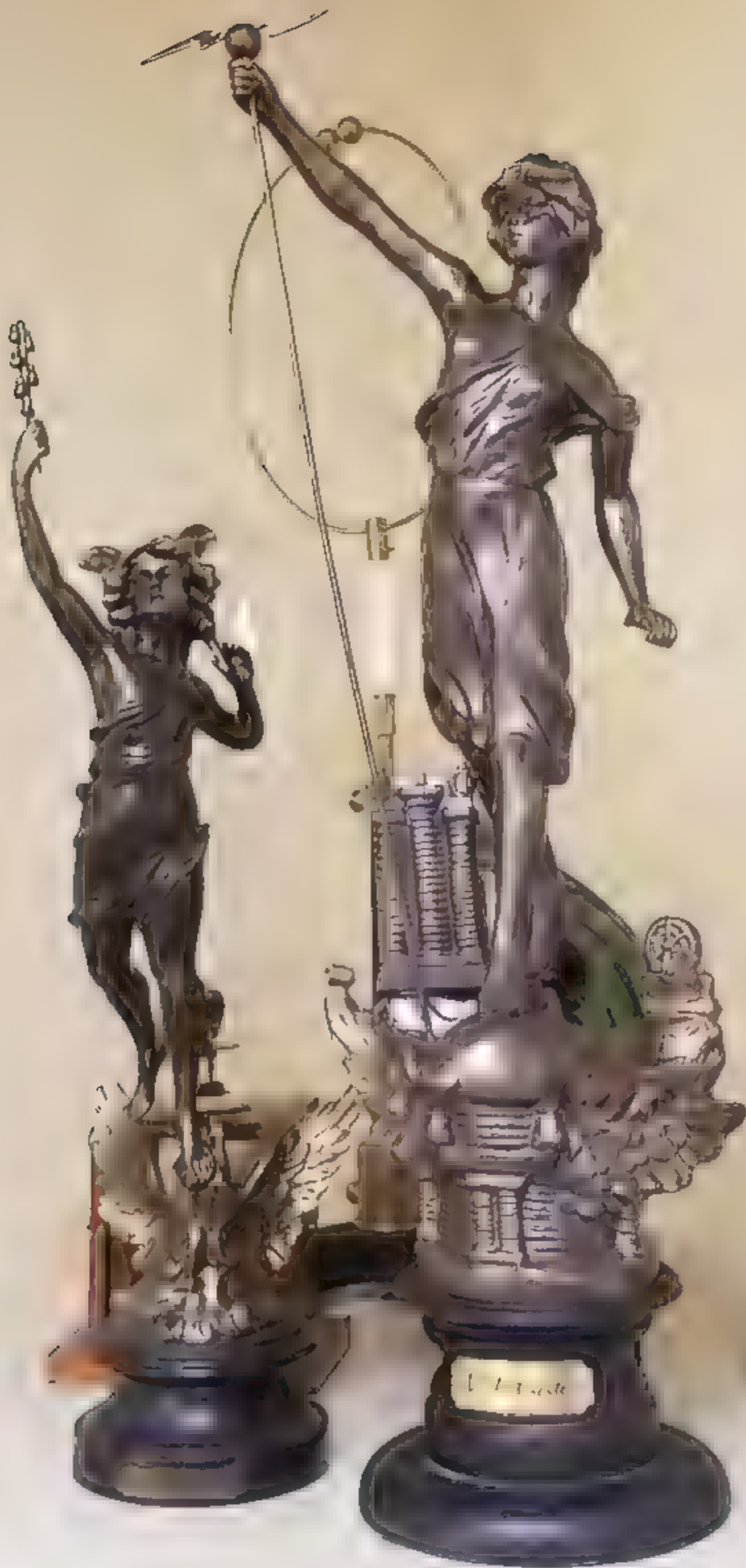
Thread manifestly made many Vibrations corresponding to the Motion of the Tube. 41

An electrical circular Cake of Bees-wax and Resin, ten Inches in Diameter, was placed horizontally upon a tall Glass Receiver near 3 Feet high, such as is made use of for the dropping the Leather at 1 Guinea. This Cake being, the preceding Evening about Eight o'Clock, warmed with an hot Iron held over it, and then struck perpendicularly all over its Surface with the Hine's in parallel Directions, and so left uncovered, and an Ivory Ball about 1 1/2 Inch Diameter placed in the Centre, a fine white Thread about 10 Inches long, with a small Piece of Cork, the Size of a Pin's Head, at the End of it, being held between the Finger and Thumb, was gently let down upon the Vertex of the Ball, it first flew off at some Distance, and then made several pretty regular Revolutions from West to East about it, in the Form of a Circle.

The Ball was removed, and the Cake again warmed and excited as Exper. 5. before; after which the Ball was replaced at a little Distance from the Centre, nearer to Mr Weller; the Consequence of which was, that the pendulous little Body moved with a direct Motion as before, but in an Orbit that resembled an Ellipse, having the Ball in one of its Foci. Two Bullets fixed on little Stands of Cork about 1/2 of an Inch high, Exper. 6. were placed upon the Cake, each about an Inch distant from the Centre of it, and in a Line with the Centre and Mr Weller; the pendulous Body described an Orbit resembling an Ellipse, having the two Bullets for its Foci, and the Motion was direct from West to East.

Instead of the Cork, another pendulous Body of a cylindrical Form Exper. 7. was made use of, tied to a fine white Thread about 20 Inches long; the Cylinder consisted of two circular Bases of Paper 1/2 an Inch Diameter, which Bases of equal size Threads passed at equal Distances from one another, knotted at the lower Base separately, and joined together in one Knot at about 1/2 an Inch Distance from the upper Base, from which Knot proceeded the long Thread. This Body moved from West to East about the central Ball, and at the same time discovered a Motion about its own Axis in the same Direction; but after two or three Turns generally stoppt, and turned the contrary Way, which seemed to arise from the untwisting of the Thread.

A Thread about a Foot long, was suspended from a horizontal Line Exper. 8. of Packthread, parallel to it an excited Tube placed erect in a Stand, the Thread approached the Tube, and continued in a State of Attraction: A Thread of the same Length, suspended from a Silk Line, vibrated backward and forwards 2 or 3 times, being first attracted, and then repelled, and continuing some time repelled; but upon joining the Top of the Tube, by a Packthread going round it, to the Loop of the Thread, the Thread continued constantly in a State of Repulsion, shewing no Tendency to Attraction.







*Imagine*

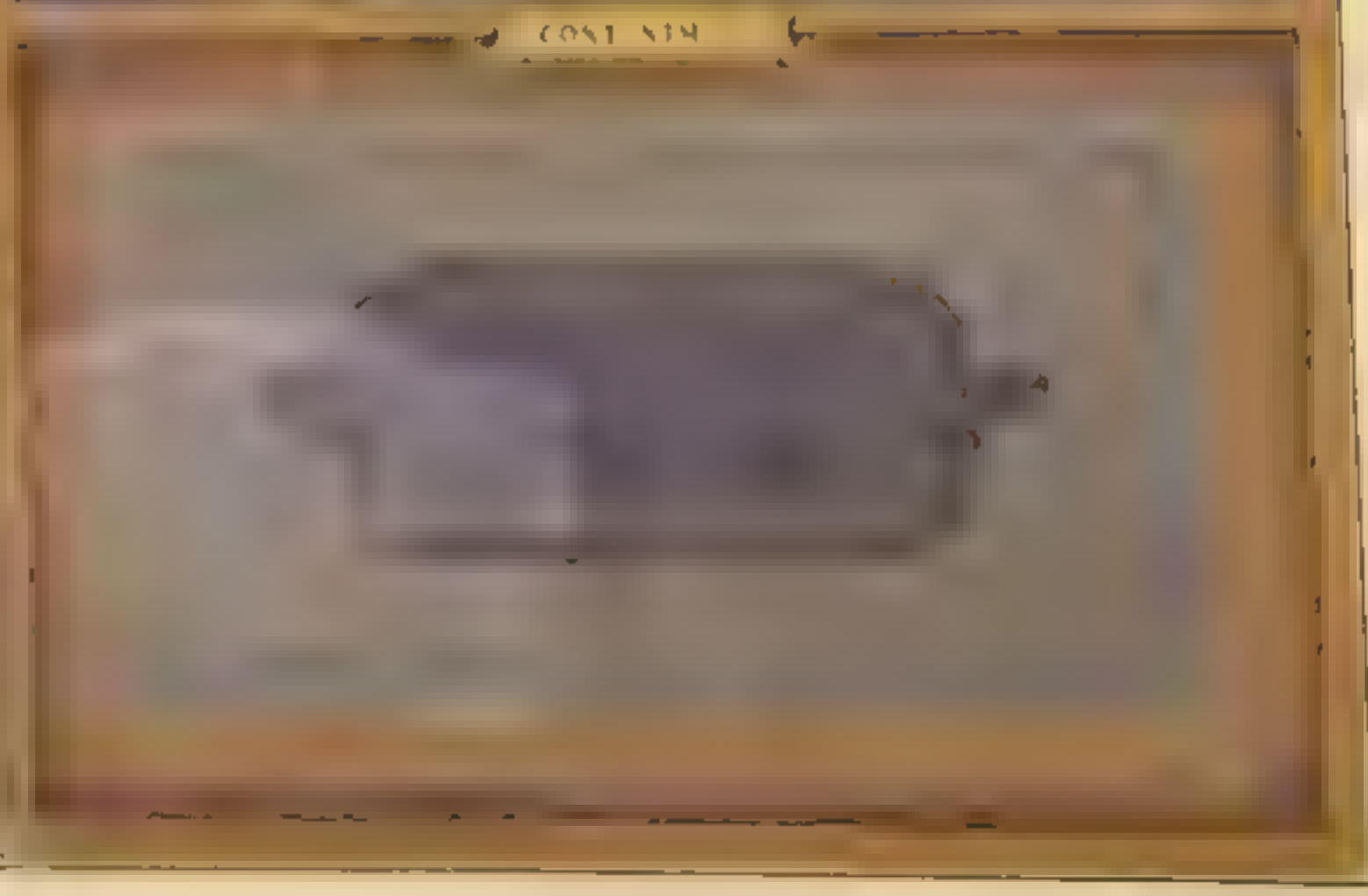






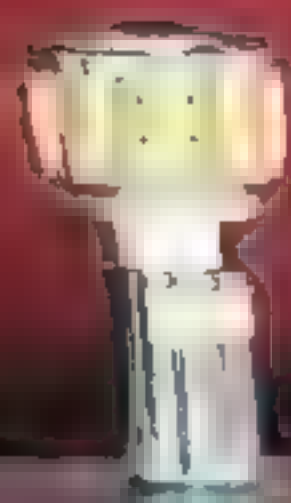
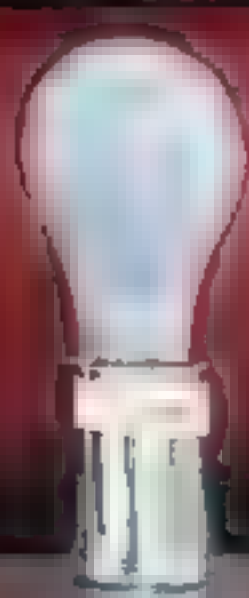
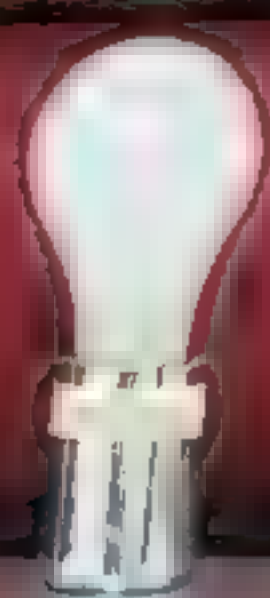






MIN 1503





































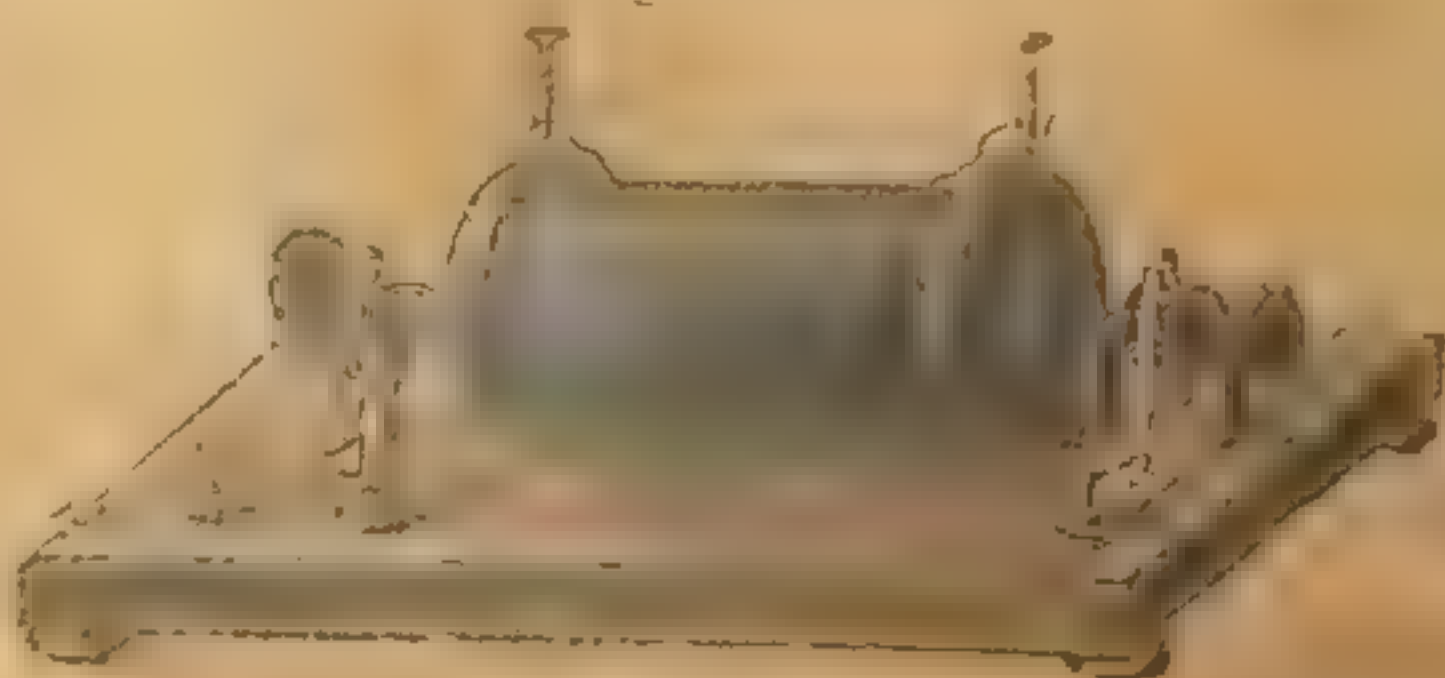






NOTICE ILLUSTRÉE  
SUR LES  
EXPÉRIENCES CURIEUSES ET AMUSANTES  
QUE L'ON PEUT RÉPÉTER AVEC LA  
**BOBINE RUHMKORFF**

PAR A. LOISEAU FILS  
Complètement refondue par un Praticien



13<sup>e</sup> ÉDITION

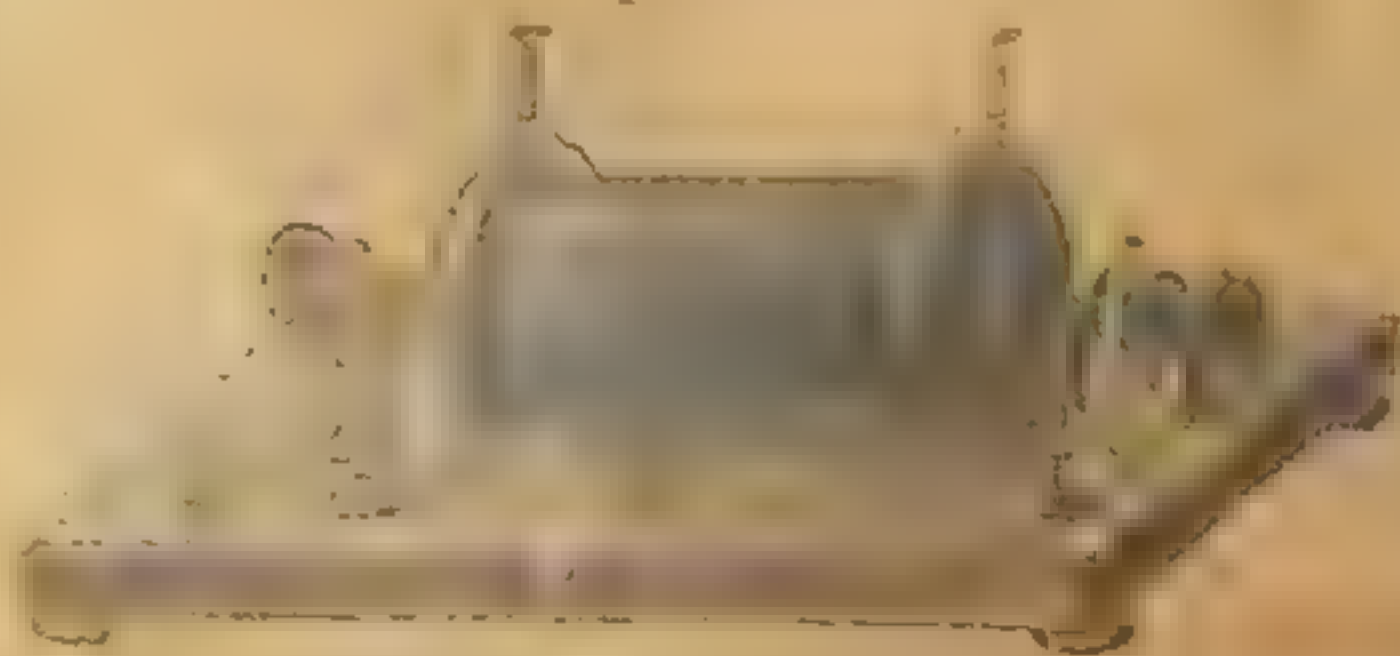
ENTRÉE D'UN PORTAIT LE RUHMKORFF  
SUIVIE D'AUTRES EXPÉRIENCES D'ÉLECTRICITÉ  
et de la  
DESCRIPTION DE QUELQUES APPAREILS D'APPLICATION DOMESTIQUE

PRIX : UN FRANC

*Publié de Geissler.*

NOTRE INDUSTRIE  
EN ÉLECTRICITÉ  
QUE L'ON PEUT RÉPÉTER AVEC LA  
**BOBINE RUHMKORFF**

PAR A. LONDEAU FES  
Complètement refondue par un praticien



13<sup>e</sup> ÉDITION

ENTRÉE D'UN PORTRAIT DE RUHMKORFF  
SUIVIE D'AUTRES EXPÉRIENCES D'ÉLECTRICITÉ  
et de la  
DESCRIPTION DE QUELQUES APPAREILS D'APPLICATION DOMESTIQUE

**PRIX : UN FRANC**

*Carl de Geissler*

*Lumière*










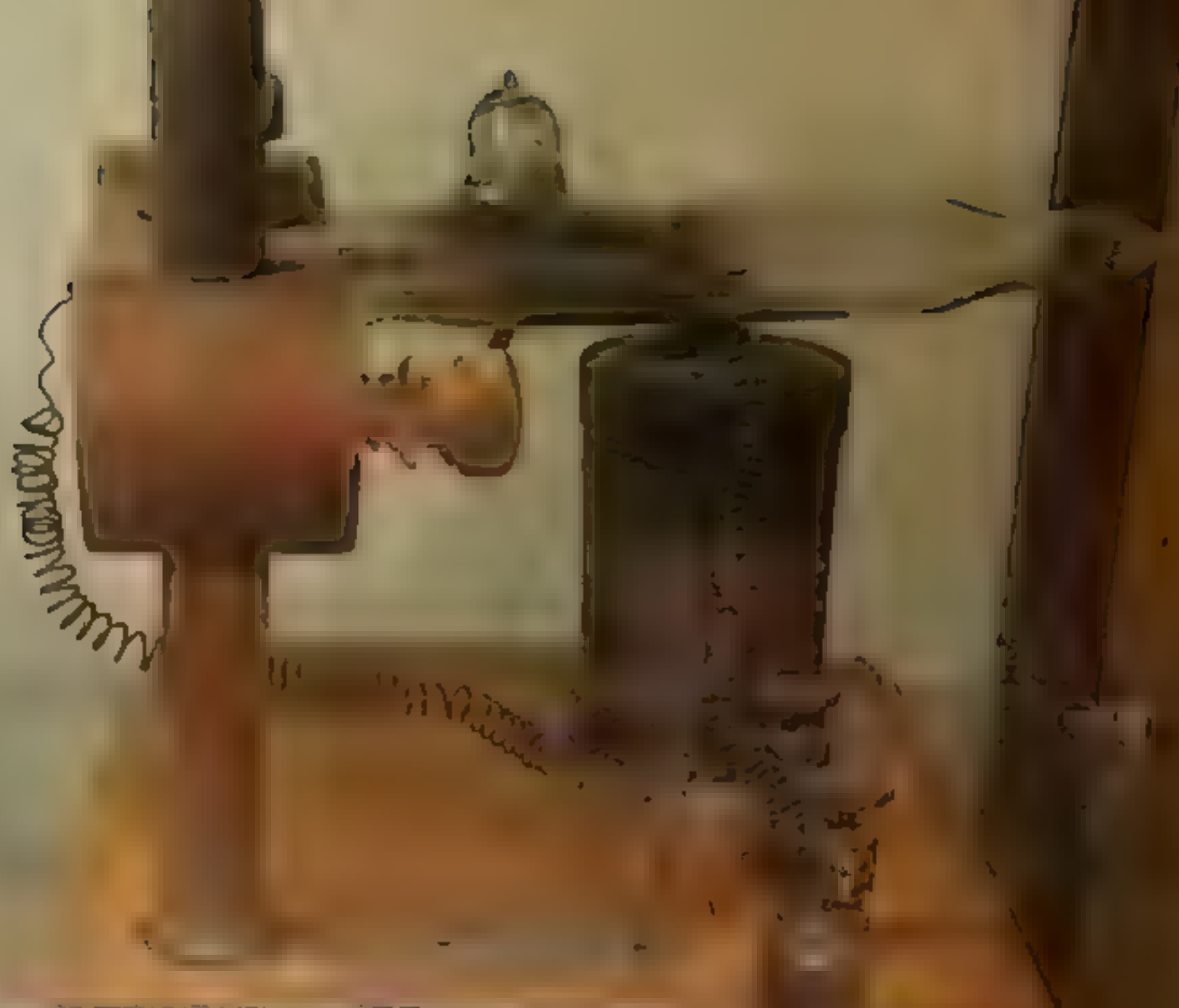
Maxwell  
Bicycle  
German  
19

A photograph of a historical scientific instrument, a compound magnet and electroscope, displayed in a museum. The instrument is a dark, rectangular box with a hinged lid, mounted on a wooden base. A metal rod with a hook is attached to the top. A label in the foreground identifies it as Daniel Davy's Compound Magnet and Electroscope, No. 10.

Daniel Davy's  
Compound Magnet and  
Electroscope

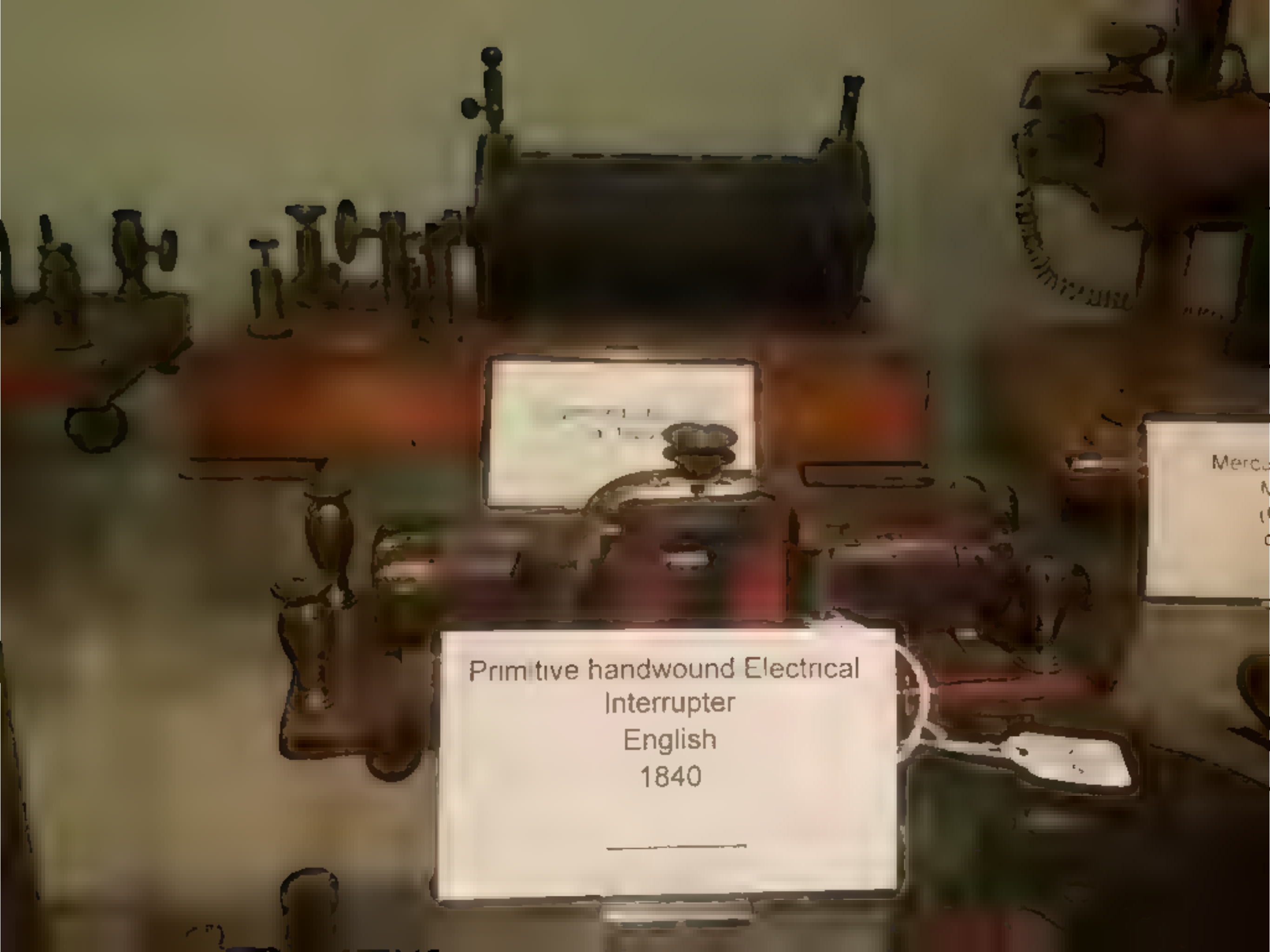
No. 10

10




Mercury Interrupter  
Max Konl  
(German)  
ca 1900





Primitive handwound Electrical  
Interrupter  
English  
1840

Mercat  
N  
(  
C




Daniel Davis  
Compound magnet and  
Electrotome  
USA  
1940's (early)











Daniel Davis  
Contracting Hex  
JSA  
1348

Barrow's Spring  
Balance  
ca 18



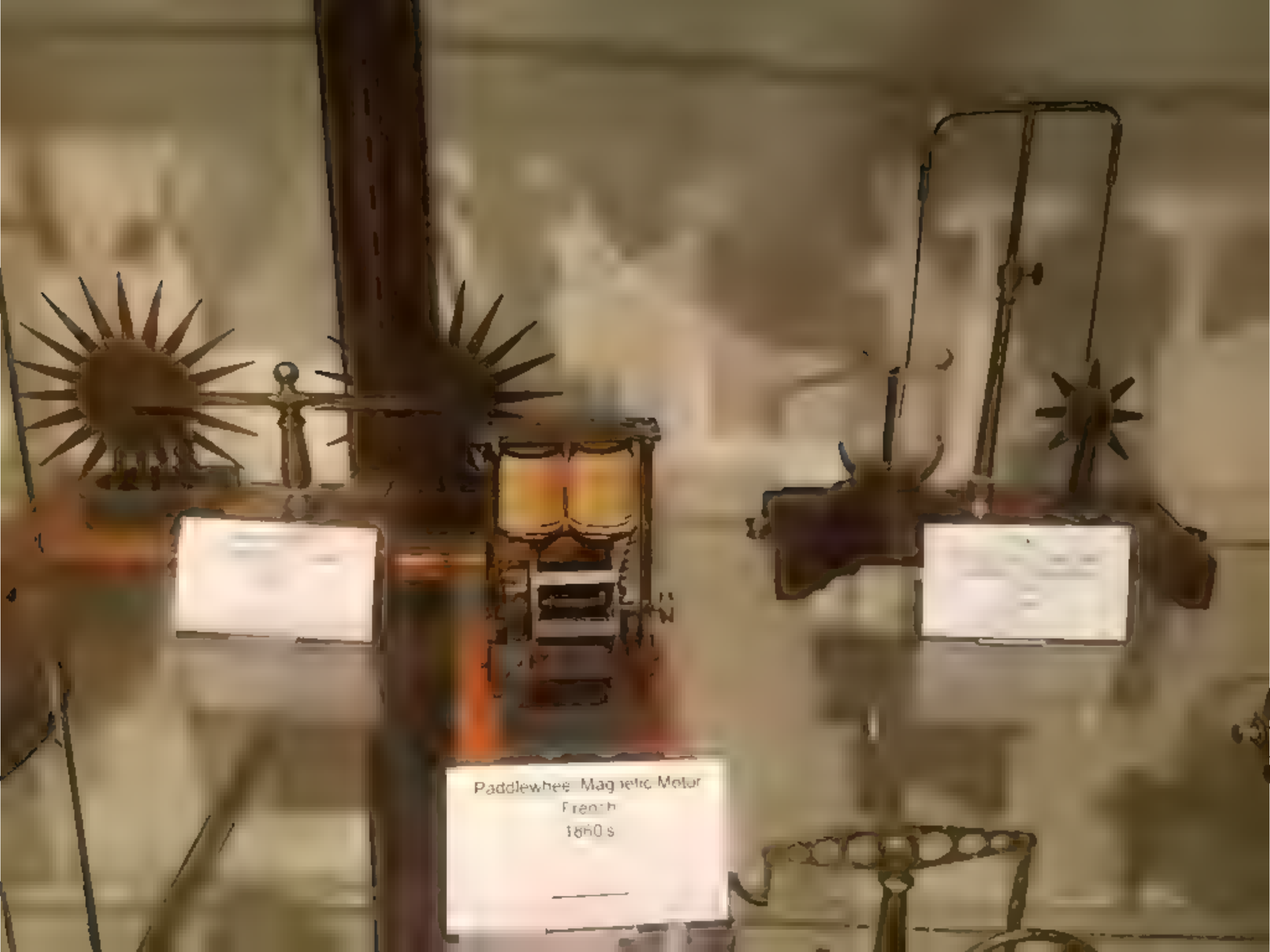
Barlow's Spur Wheel  
Benjamin Pike Jr  
ca 1848

Barlow & Spar V  
Hamm P ke

Very primitive electromagnetic motor  
invented by Rev. William Ritchie "probably  
the first man to produce the rotary motion of  
an electromagnet" in 1833 (The  
Development of Electrical Technology in the  
19th Century United States National  
Museum Bulletin 228 Washington D. C.  
1962)

Ritchie's Motor  
ca. 1830's





Paddlewheel Magnetic Motor  
French  
1860s



Faraday Motor  
with Mercury  
1833

FARADAY ROTATING WIRE  
EXPERIMENT

Henry's Law  
1846

Faraday's and  
Henry's Law  
1833

23



Revolving Armature Engine  
1848

E ec



W. D. E. P. Inc.  
1000 Oak  
848



Single Ampere's  
Rotating Battery  
ca 1862

Apparatus to Exhibit Deflection  
and Rotation of the Earth  
Wireless Telegraphy of a Fixed  
Horizontal Magnet  
Working at 100

Pike  
Amper's Rotating Battery  
USA  
848





Dane Davis  
Re. [unclear] [unclear]  
[unclear]  
189









Flask, glass, 100 ml  
USA  
1950



Early vacuum  
Demonstration Apparatus  
Italian  
ca 1840s

Herzog-Museum  
Karlsruhe  
Physikalisches Museum  
Karlsruhe  
Herzog-Museum  
Karlsruhe

















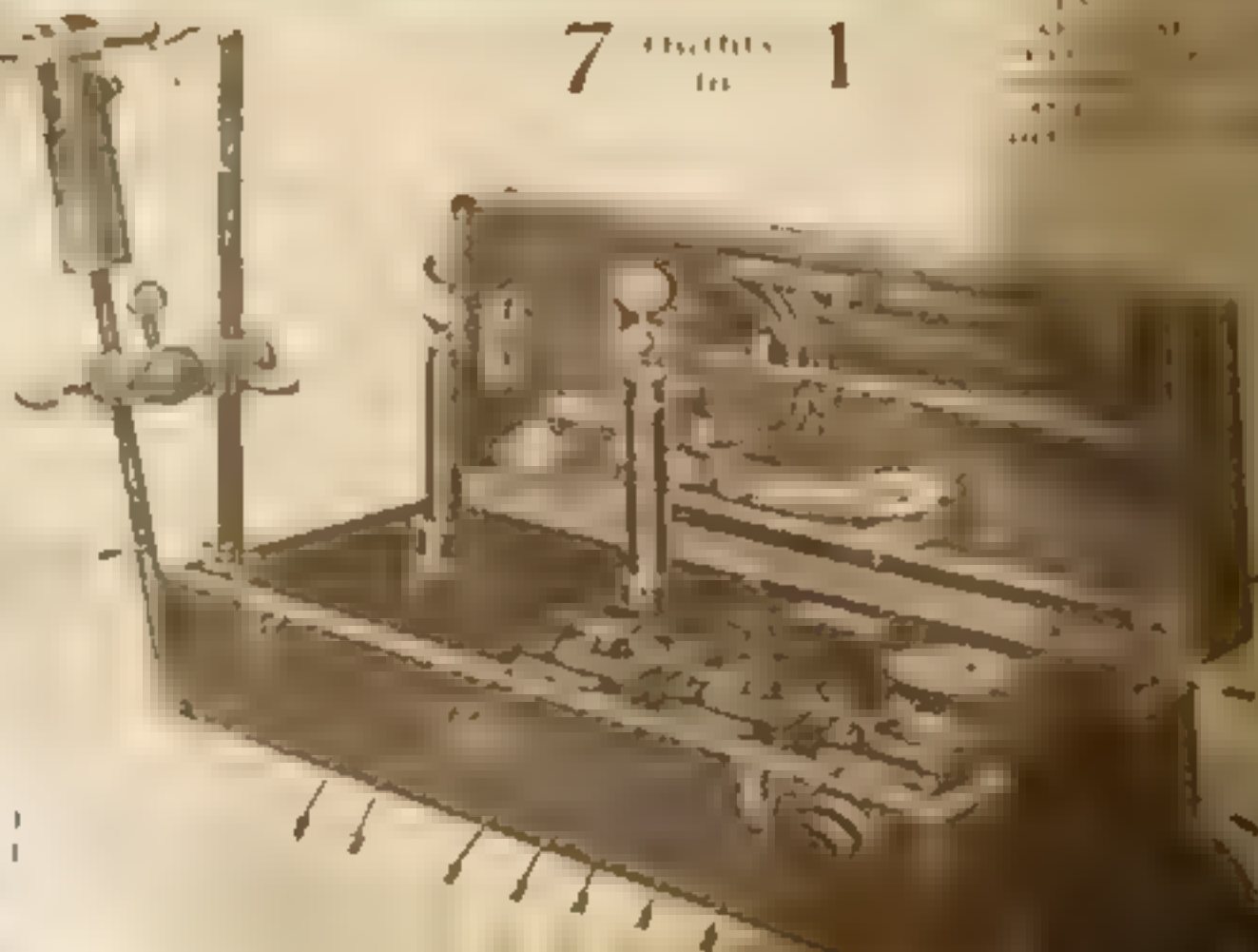
Model  
"R"  
Cool

See page 10

PORTABLE  
POWERFUL  
RADIATION

OPERATING  
AT 100° C.

7 1/2 inches 1



# EDISON ELECTRIC PEN



21



H. A. I. COMPANY

A. O.  
A. +

PRICE LIST

1.1

1.1 1.1 1.1

EXTRA 1.1 1.1 1.1

1.1 1.1 1.1 1.1 1.1

1.1 1.1 1.1 1.1 1.1

1.1 1.1 1.1 1.1 1.1

























# JOSEPH HENRY ELECTROMAGNET

When a wire is connected to a battery, an electric current flows through it. This current creates a magnetic field around the wire. If the wire is coiled into a loop, the magnetic field is concentrated in the center of the loop. This is the principle of the electromagnet.

The strength of the magnetic field depends on the amount of current flowing through the wire and the number of turns in the coil. Increasing the current or the number of turns will increase the strength of the magnetic field.

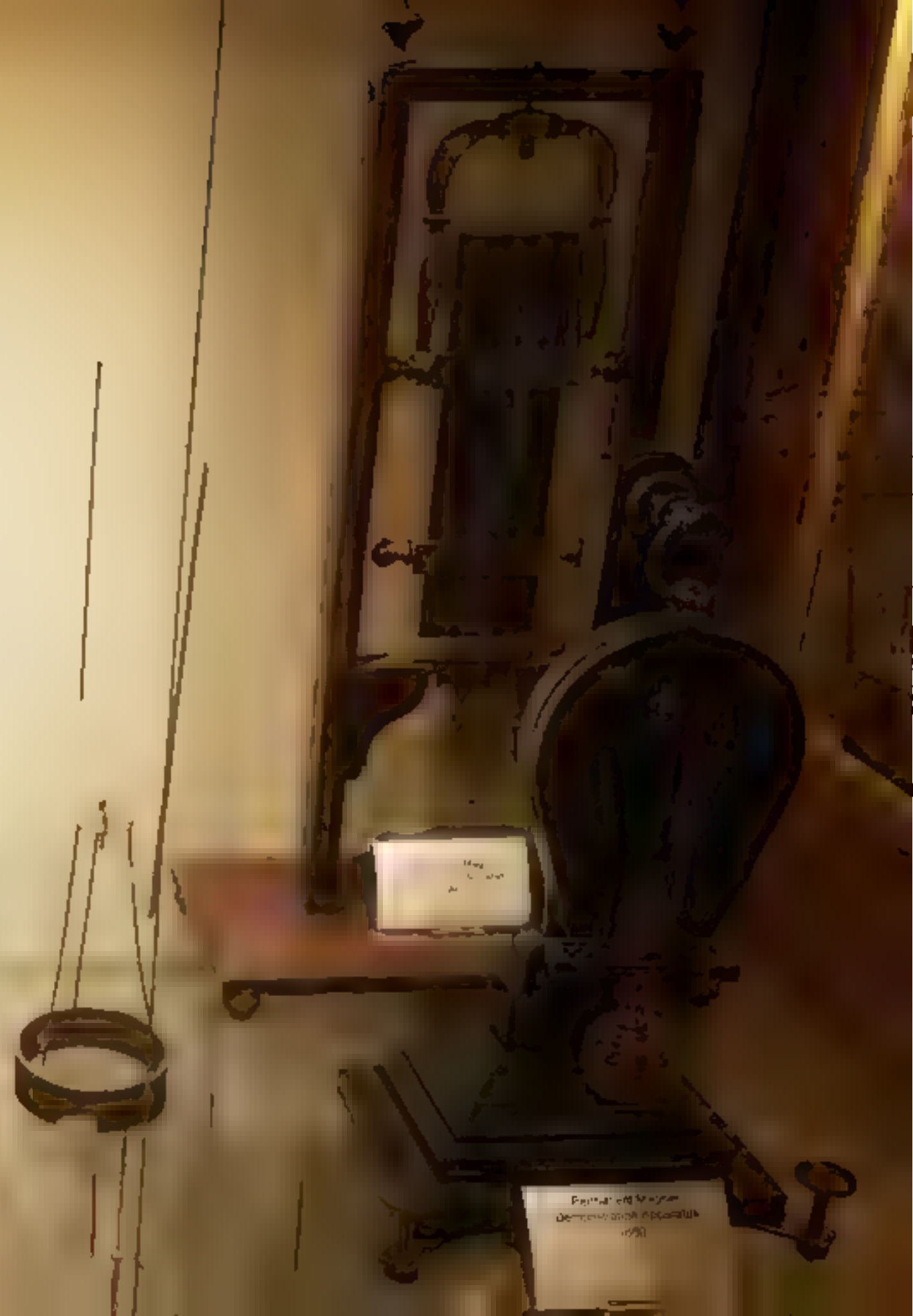
Electromagnets are used in many applications, including electric motors, generators, and relays. They are also used in medical devices, such as MRI machines, and in industrial machinery.











DAVIS & KIDDER'S

PATENT MAGNETO-ELECTRIC MACHINE

FOR NERVOUS DISEASES.

212 PEARL ST. NEW YORK.

[1 section]

4. 77.5% + 2.0% = 79.5% CTV. L.

[illegible]

10. 11. 1941. 10. 11. 1941. 10. 11. 1941.

 $\eta = 4.9$ 
$$| \cdot |_T = | \cdot |_{T_1} + | \cdot |_{T_2}$$

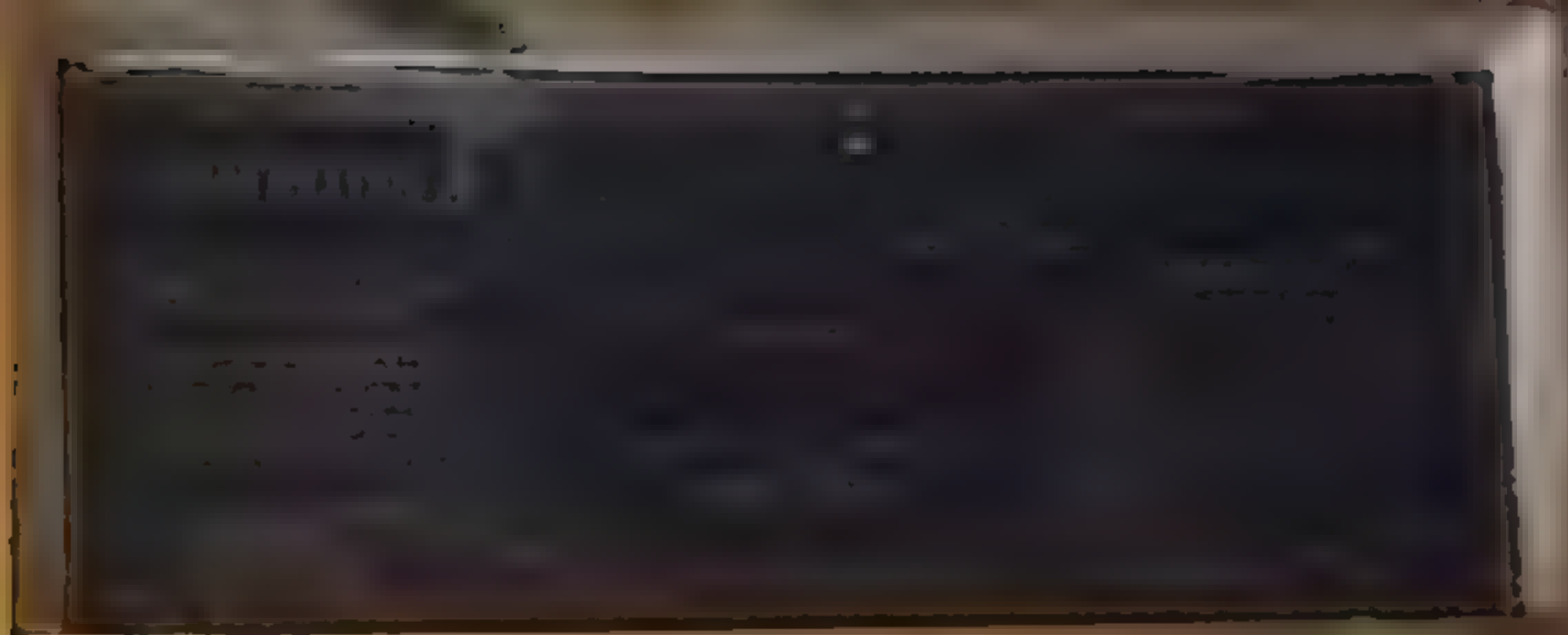
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[illegible]

4. 111 2011

100



IMPROVED TACHYMETRIC ELECTRIC MACHINE

ELECTRO MAGNETIC MACHINES, TELEGRAPH RECEIVERS,

TELEPHONES, AND ALL

REPAIRS PROMPTLY

W. C. & J. N. H. No. 100 N. 1st St. St. Louis, Mo.

W. C. & J. N. H.

W. C. & J. N. H.



IMPROVED MAGNETO ELECTRIC MACHINE

ELECTRO MAGNETIC MACHINES, TELEGRAPH RECEIVERS,

AND ELECTRIC MACHINES AND LAMPS

MANUFACTURED AND REPAIRED BY

M. C. L. I. & CO. 100 N. 3rd St. New York, N. Y.





















L-2

























30 18 1

*The Radio Show*

PRODUCED BY  
RADIO DEVELOPMENT AND  
Jersey City, N.J.

40% ALC. BY VOL.









well-placed U.S. companies.

Electric companies, grappled to  
man for the electrification of America,  
as the go-to provider of electricity.

s of practical electricity, the principal  
house and Thomas Edison, were  
ous potential reward: the opportunity  
with all of the things that it might  
ions of American businesses and homes.













NOTICE

# WAR *of the* CURRENTS

The race to determine  
the technology that would  
power the world.

EDISON

WESTINGHOUSE

Underpinning by  
the American people





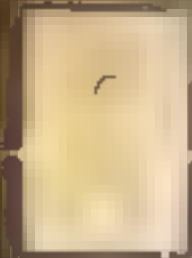
## ENTERING THE FRAY

Introduced by John D. Rockefeller, the first president of the National Geographic Society, the magazine was founded in 1888. It was the first of its kind, a magazine that was both educational and entertaining. It was the first of its kind, a magazine that was both educational and entertaining. It was the first of its kind, a magazine that was both educational and entertaining.

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### THE HISTORY OF THE FRAY

The history of the Fray is a story of discovery and exploration. It is a story of the people who have made the Fray what it is today. It is a story of the people who have made the Fray what it is today. It is a story of the people who have made the Fray what it is today.



## PUTTING THE PIECES TOGETHER

The pieces of the Fray are the people who have made it what it is today. It is a story of the people who have made the Fray what it is today. It is a story of the people who have made the Fray what it is today.

### THE HISTORY OF THE FRAY

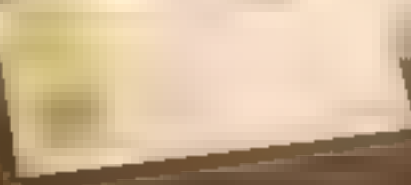
The history of the Fray is a story of discovery and exploration. It is a story of the people who have made the Fray what it is today. It is a story of the people who have made the Fray what it is today.





# PUTTING THE PIECES TOGETHER

...







THE  
DECISIVE  
BATTLE

THE BATTLE OF BULL RUN  
AUGUST 22, 1862  
A BATTLE OF THE  
CIVIL WAR  
FIGHTED BETWEEN  
THE ARMY OF THE  
PENINSULA AND  
THE ARMY OF THE  
VALENTIA

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FIGHTED BETWEEN  
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PENINSULA AND  
THE ARMY OF THE  
VALENTIA

NO



PHOTO  
PACED







20



